

METHOD AND STRUCTURE FOR CREATING ULTRA LOW RESISTANCE DAMASCENE COPPER WIRING

ABSTRACT OF THE DISCLOSURE

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A low resistance copper damascene interconnect structure is formed by providing a thin dielectric film such as SiC or SiOC formed on the sidewalls of the via and trench structures to function as a copper diffusion barrier layer. The dielectric copper diffusion barrier formed on the bottom of the trench structure is removed by anisotropic etching to expose patterned metal areas. The residual dielectric thus forms a dielectric diffusion barrier film on the sidewalls of the structure, and coupled with the metal diffusion barrier subsequently formed in the trench, creates a copper diffusion barrier to protect the bulk dielectric from copper leakage.

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